

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Withdrawn) A hologram recording method according to claim 41 further comprising:

performing multiple recording of information of the signal light beam as the new hologram of the plurality of pages in the optical recording medium by changing a recording angle while changing an angle formed between the signal light beam and the reference light beam,

wherein each page of the new hologram is recorded at a recording angle different from a recording angle of each page of the plurality of pages of the hologram previously recorded in the optical recording medium.

2. (Canceled)

3. (Withdrawn) A hologram recording method according to claim 1, wherein a polarization state of the signal light beam or the reference light beam at the time of recording each page of the new hologram is caused to be different from a polarization state of the signal light beam or the reference light beam at the time of recording each page of the plurality of pages of the hologram previously recorded in the optical recording medium.

4. (Withdrawn) A hologram recording method according to claim 3, wherein:

a polarization direction of the signal light beam and a polarization direction of the reference light beam at the time of recording each page of the new hologram are caused to be orthogonal to each other when a polarization direction of the signal light beam and a polarization direction of the reference light beam at the time of recording each page of the plurality of pages of the hologram previously recorded in the optical recording medium are parallel to each other; and

the polarization direction of the signal light beam and the polarization direction of the reference light beam at the time of recording each page of the new hologram are caused to be parallel to each other when the polarization direction of the signal light beam and the polarization direction of the reference light beam at the time of recording each page of the plurality of pages of the hologram previously recorded in the optical recording medium are orthogonal to each other.

5. (Withdrawn) A hologram recording method according to claim 1, wherein the optical recording medium comprises a photorefractive material.

6. (Withdrawn) A hologram recording method according to claim 1, wherein the optical recording medium comprises a photochromic material.

7. (Withdrawn) A hologram recording method according to claim 1, wherein the optical recording medium comprises a polarization sensitive material.

8. (Withdrawn) A hologram recording method according to claim 1, wherein the optical recording medium comprises at least one kind of polymer selected from polyesters.

9. (Withdrawn) A hologram recording method according to claim 8, wherein the at least one kind of polymer has an azobenzene structure in a side chain.

10. (Currently Amended) A hologram recording method ~~according to claim 41~~ further comprising:

recording a first hologram of a plurality of pages in a region in an optical recording medium by irradiating the optical recording medium with the with a signal light beam and the reference a reference light beam at the same time while making an angle formed between the signal light beam and the reference light beam a constant value; and

performing multiple recording of information of the signal light beam as the new hologram of the plurality of pages in the optical recording medium, in such a manner that a recording position is changed while relatively moving at least one of (A) the signal light

beam and the reference light beam, and beam and (B) the optical recording medium,medium such that recording positions for the plurality of pages are changed at a predetermined interval from a recording start position,

shifting a recording start position of a second hologram from the recording start position of the first hologram by substantially half of the predetermined interval, and recording a plurality of pages of the second hologram in the substantially same region where the first hologram has been recorded at the substantially same predetermined interval from the shifted recording start position.

wherein each page of the new hologram is recorded at a recording position different from a recording position of each page of the plurality of pages of the hologram previously recorded in the optical recording medium.

11. (Canceled)

12. (Currently Amended) A hologram recording method according to claim 10, wherein a polarization state of the signal light beam or the reference light beam at the time of recording each page of the newpage of the second hologram is different from a polarization state of the signal light beam or the reference light beam at the time of recording each page of the plurality of pages of the hologram previously recorded in the optical recording medium, and

wherein the optical recording medium comprises a material having photoinduced birefringence

13. (Currently Amended) A hologram recording method according to claim 12, wherein:

a polarization direction of the signal light beam and a polarization direction of the reference light beam at the time of recording each page of the newhologramsecond hologram are orthogonal to each other when a polarization direction of the signal light beam

and a polarization direction of the reference light beam at the time of recording each page of the plurality of pages of the first hologram previously recorded in the optical recording medium are parallel to each other, and

the polarization direction of the signal light beam and the polarization direction of the reference light beam at the time of recording each page of the new hologram second hologram are parallel to each other when the polarization direction of the signal light beam and the polarization direction of the reference light beam at the time of recording each page of the plurality of pages of the the first hologram previously recorded in the optical recording medium are orthogonal to each other.

14. (Original) A hologram recording method according to claim 10, wherein the optical recording medium comprises a photorefractive material.

15. (Original) A hologram recording method according to claim 10, wherein the optical recording medium comprises a photochromic material.

16. (Original) A hologram recording method according to claim 10, wherein the optical recording medium comprises a polarization sensitive material.

17. (Original) A hologram recording method according to claim 10, wherein the optical recording medium comprises at least one kind of polymer selected from polyesters.

18. (Original) A hologram recording method according to claim 17, wherein the at least one kind of polymer has an azobenzene structure in a side chain.

19. (Withdrawn) A hologram recording method according to claim 41 further comprising:

irradiating an optical recording medium with the signal light beam and the reference light beam at the same time while changing wavelengths of the signal light beam and the reference light beam, in such a manner that an angle formed between the signal light beam and the reference light beam is made a constant value,

wherein each page of the new hologram is recorded by using the signal light beam and the reference light beam, which have wavelengths different from wavelengths at the time of recording each page of the plurality of pages of the hologram previously recorded in the optical recording medium.

20. (Canceled)

21. (Withdrawn) A hologram recording method according to claim 19, wherein a polarization state of the signal light beam or the reference light beam at the time of recording each page of the new hologram is caused to be different from a polarization state of the signal light beam or the reference light beam at the time of recording each page of the plurality of pages of the hologram previously recorded in the optical recording medium.

22. (Withdrawn) A hologram recording method according to claim 21, wherein:

a polarization direction of the signal light beam and a polarization direction of the reference light beam at the time of recording each page of the new hologram are caused to be orthogonal to each other when a polarization direction of the signal light beam and a polarization direction of the reference light beam at the time of recording each page of the plurality of pages of the hologram previously recorded in the optical recording medium are parallel to each other; and

the polarization direction of the signal light beam and the polarization direction of the reference light beam at the time of recording each page of the new hologram are caused to be parallel to each other when the polarization direction of the signal light beam and the polarization direction of the reference light beam at the time of recording each page of the plurality of pages of the hologram previously recorded in the optical recording medium are orthogonal to each other.

23. (Withdrawn) A hologram recording method according to claim 19, wherein the optical recording medium comprises a photorefractive material.

24. (Withdrawn) A hologram recording method according to claim 19, wherein the optical recording medium comprises a photochromic material.

25. (Withdrawn) A hologram recording method according to claim 19, wherein the optical recording medium comprises a polarization sensitive material.

26. (Withdrawn) A hologram recording method according to claim 19, wherein the optical recording medium comprises at least one kind of polymer selected from polyesters.

27. (Withdrawn) A hologram recording method according to claim 26, wherein the at least one kind of polymer has an azobenzene structure in a side chain.

28. (Withdrawn) A hologram recording apparatus according to claim 42, wherein the hologram recording apparatus changes a recording angle by irradiating the optical recording medium with the signal light beam and a reference light beam at the same time while changing an angle formed between the signal light beam and the reference light beam, such that each page of the new hologram is recorded at a recording angle different from a recording angle of each page of the plurality of pages of the hologram previously recorded in the optical recording medium.

29. (Currently Amended) A hologram recording apparatus ~~according to claim 42, apparatus,~~

wherein the hologram recording apparatus makes an angle formed between the ~~signal a signal~~ light beam and a reference light beam a constant value and ~~changes a recording position by irradiating the irradiates an~~ optical recording medium with the signal light beam and the reference light beam at the same time while relatively moving at least one of (A) the signal light beam and the reference light ~~beam, beam~~ and (B) the optical recording ~~medium, medium~~ from a recording start position, such that that:

a first set of holograms of a first set of pages is recorded,

each page of the ~~new~~first set of pages in the first set of hologram is recorded at a recording position different from a recording position of each page of the plurality of pages of the hologram previously recorded in the optical recording medium, at a predetermined interval, and

when a second set of holograms of a second set of pages is overwritten in substantially the same region where the first set of pages was of the first set of holograms was recorded, the hologram recording apparatus shifts a recording start position of the second set of holograms from the recording start position of the first set of holograms, which has been recorded, by substantially half of the predetermined interval and records each page of the second set of pages at the substantially same predetermined interval.

30. (Withdrawn) A hologram recording apparatus according to claim 42, wherein the hologram recording apparatus makes an angle formed between the signal light beam and a reference light beam a constant value and irradiates the optical recording medium with the signal light beam and the reference light beam at the same time while changing wavelengths of the signal light beam and the reference light beam, such that each page of the new hologram is recorded by using the signal light beam and the reference light beam, which have wavelengths different from wavelengths at the time of recording each page of the plurality of pages of the hologram previously recorded in the optical recording medium.

31. (Currently Amended) A hologram recording apparatus comprising:

- a light source for emitting a coherent light beam;
- a stage which rotates or moves an optical recording medium;
- a light beam separating optical path changing device which changes an optical path so that the optical recording medium is irradiated with a reference light beam and a signal light beam at the same time after the coherent light beam is separated into a light beam for the reference light beam and a light beam for the signal light beam;

a spatial light modulator which is arranged on the optical path of the light beam for the signal light beam, and modulates the light beam for the signal light beam according to a supplied recording signal for each page so as to generate a signal light beam for recording each page of a ~~new hologram; set of holograms;~~

~~a detector which obtains a reproduced light from the optical recording medium and detects a light beam intensity of the reproduced light; and~~

~~a signal supplying device which supplies the recording signal for a new the set of holograms hologram to the spatial light modulator so that the new a plurality of pages of the set of holograms hologram is recorded in a state where the light beam intensity of the reproduced light beam from each page of a plurality of pages of the hologram which has been previously recorded in the optical recording medium is minimized at a predetermined interval from a recording start position in a region in the optical recording medium,~~

~~wherein when a new set of holograms of a new plurality of pages is recorded in substantially the same region where the set of holograms has been recorded, the signal supplying device supplies a recording signal for the new set of holograms to the spatial light modulator so that a recording start position of the new set of holograms is shifted from the recording position of the set of holograms, which has been recorded, by substantially half of the predetermined interval, and the new plurality of pages of the new set of holograms is recorded at the substantially same predetermined interval.~~

32. (Canceled)

33. (Currently Amended) A hologram recording apparatus according to claim 31, further comprising

an analyzer which transmits a component, in a predetermined polarization direction, of a diffraction light beam from each page of the ~~set of holograms~~hologram recorded in the optical recording medium, wherein

the detector detects intensities of transmitted light beams that are transmitted through the analyzer.

34. (Currently Amended) A hologram recording apparatus according to claim 31, wherein a polarization state of the signal light beam or the reference light beam at the time of recording each page of the new set of hologramshologram is different from a polarization state of the signal light beam or the reference light beam at the time of recording each page of the plurality of pages of the set of hologramshologram which has been previously recorded in the optical recording medium, and

wherein the optical recording medium comprises a material having photoinduced birefringence.

35. (Currently Amended) A hologram recording apparatus according to claim 34, wherein:

a polarization direction of the signal light beam and a polarization direction of the reference light beam at the time of recording each page of the new set of hologramshologram are orthogonal to each other when a polarization direction of the signal light beam and a polarization direction of the reference light beam at the time of recording each page of the plurality of pages of the set of hologramshologram which has been previously recorded in the optical recording medium are parallel to each other, and

the polarization direction of the signal light beam and the polarization direction of the reference light beam at the time of recording each page of the new set of hologramshologram are parallel to each other when the polarization direction of the signal light beam and the polarization direction of the reference light beam at the time of recording each page of the plurality of pages of the set of hologramshologram which has been previously recorded in the optical recording medium are orthogonal to each other.

36. (Withdrawn) A hologram recording method for rewriting a second hologram on a hologram recording medium on which a first hologram is recorded, the method comprising:

rewriting and recording the second hologram in a state in which a diffraction light beam intensity from the first hologram is minimized.

37. (Withdrawn) The hologram recording method according to claim 36, wherein rewriting and recording the second hologram in the state in which the diffraction light beam intensity from the first hologram is minimized and a diffraction light beam intensity from the second hologram is maximized.

38. (Withdrawn) The hologram recording method according to claim 36, wherein rewriting and recording the second hologram at a recording angle at which the diffraction light beam intensity from the first hologram is minimized.

39. (Withdrawn) The hologram recording method according to claim 36, wherein rewriting and recording the second hologram at a position at which the diffraction light beam intensity from the first hologram is minimized.

40. (Withdrawn) The hologram recording method according to claim 36, wherein rewriting and recording the second hologram using a wavelength with which the diffraction light beam intensity from the first hologram is minimized.

41-45. (Canceled)